



**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

EXAMINER
----------

ART UNIT	PAPER NUMBER
----------	--------------

DATE MAILED:

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

*Docketed  
3/30/99*

# Office Action Summary

Application No.

09/016,641

Applicant(s)

Gately

Examiner

Jean F. Vollano

Group Art Unit

1621



☒ Responsive to communication(s) filed on 1/7/99 (written restriction)

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-15 is/are pending in the application.

Of the above, claim(s) 1-8, 14, and 15 is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 9-13 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 1621

### DETAILED ACTION

1. The restriction election and the request for reconsideration of the restriction filed 1/19/99 has been entered as paper no 6. Applicant has chosen Group V claims 9-13. There has been no statement as to whether the applicant has elected with or without traverse. The Examiner will assume that the election is with traverse since Applicant has argued the restriction. Claims 1-8 and 14-15 are withdrawn from consideration as being drawn to a non elected invention.

### *Claim Rejections - 35 U.S.C. § 112*

2. Claims 9-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 recites the limitation of "reacting a -CH group with a compound having the formula RM". The phrase is unclear as to what is the -CH group's function and what the -CH group entails. The compound being made in this step of the process (by the reaction of RM and -CH) is called -CM. This would seem to be a reaction wherein there is a deprotonation of the carbon to form an anion with a lithium, sodium etc. counter ion such as in the formation of butyl lithium. R in the formula RM is defined as a hydrocarbon group. If R is the hydrocarbonyl group butyl and M is lithium the one would have butyl lithium. This is indeed one of the preferred compounds for RM in the specification (page 6, second paragraph). Butane is a moiety with a C-H group in it. If one reacted butane ( e.g.-CH) with butyl lithium one would have butyl lithium.

Art Unit: 1621

Butyl lithium is also a moiety that has a -CH in it. How can one react butyl lithium with butyl lithium? Cyclopentadiene has a -CH and would react with RM. However cyclopentadiene is also one of the compounds useable in step ii that reacts with -CM. The phrase is unclear and indefinite as to the metes and bounds of what is being claimed.

It is noted by the Examiner that all the relevant examples in the specification have butyl lithium (RM). However the butyl lithium is the reagent in the examples that reacts with the indene type ligands (i.e step ii). In the reaction in claims 9 to 13 it is the -CM which reacts with the indene or cyclopentadiene type ligand not the RM. Are these the same groups?

Claim 9 recites the limitation "a metallocene ligand". The term metallocene ligand can be interpreted in many ways. The term can be interpreted as a metallocene compound that is used as a ligand (e.g. cyclopentadienyl iron chloride). The term can be interpreted as a compound which does not have a metal in it but is used as a ligand for a metal to form a metallocene compound (e.g. indene). The term can mean the portion of a metallocene that has the ability to react and become a ligand to another metal or non metal compound (e.g. an aldehyde already incorporated in a metallocene structure). There is no guidance in the specification as to the use of the term in the instant invention. The phrase is unclear as to the metes and bounds of what is being claimed.

The construction of claim 9 is such that it is confusing and unclear. It should be re-written in a clear and concise manner to point out what applicant considers as the instant invention.

Art Unit: 1621

***Claim Rejections - 35 U.S.C. § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winter et al (US5576260) in view of Chem abs128 (CA: 116:21128) and Applicant's admission.

Winter et al discloses the preparation of dialkylsilane bis-substituted indenyl complexes wherein the dialkyl group can be an alkyl group with from 1-10 carbons(see abstract and column 2, lines 35 to 60).

Winter et al discloses that the first step of the preparation is the reaction of butyllithium with 2-methyl-7-phenylindene to form a  $\text{Li}^+$  substituted indenyl compound ( an alkali metalide of a metallocene ?)(see column 13, example A).

Winter et al discloses that the  $\text{Li}^+$  substituted indenyl compound is then reacted in a silylation reaction with a dimethylsilane compound which has two leaving groups ( e.g. dimethyldichlorosilane wherein the chloro groups are the leaving groups). Initially one leaving group is replaced and a mono- indenyl dialkyl chloro silane compound is formed( e.g. dimethylchloro2-methyl-7-phenylindenyl silane)(see example A, column 13).

Winter et al discloses that additional butyl lithium is added to a different indenyl compound (i.e. 2 methyl indene) to form a second  $\text{Li}^+$  substituted indenyl compound which is

Art Unit: 1621

then reacted with the dimethylchloro2-methyl-7-phenylindenyl silane to form a dimethyl bis substituted indenyl silane( see example A, Column 13).

Winter et al is silent as to the isolation of the  $\text{Li}^+$  substituted indenyl compound (i.e. alkali metalide of the metallocene?). However it is well within the purview of one skilled in the art to isolate the prepared alkali metalide before using it in the subsequent step.

Winter et al differs from the instant invention in that the compound used is a dialkyldichlorosilane and not a dialkyl bis triflate or dialkyl bis mesylate silane (i.e the compounds of formula I of the instant invention).

Chem abs128 discloses compounds of formula I of the instant invention wherein the alkyl group Q (instant formula I) is t-butyl and the other two ligands are trifluoromethanesulfonates (triflate).

Chem abs128 discloses that the compounds show excellent silylation properties because of the compounds high electrophilicity.

It would have been obvious to one skilled in the art to use the known process of Winter et al to produce a dialkyl mono or di metallocene ligand (?) silane by a silylation reaction using the known bis(1,1-dimethylethyl)trifluoro methanesulfonic acid silylene ester disclosed by Chem abs 128 with the expectation of replacing one or both of the leaving groups on the dialkylsilane since Chem abs 128 discloses that the triflate compounds are excellent silylation agents. The preparation of butyl lithium is very well known in the art as noted by applicant in the specification , page 6, lines 4-5) The silylation process is known and the silylating agent is known. It is not

Art Unit: 1621

unobvious to substitute one known dialkyl silylating agent ( a reagent with good leaving groups - dialkylditriplate silane) for another known dialkyl silyation agent( dialkyldichlorosilane).

5. Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Palackal et al (US5401817) in view of Chem abs128 (CA: 116:21128) and Applicant's admission.

Palackal et al discloses a process for the preparation of dialkylsilane bis-substituted cyclopentadienyl type complexes wherein the dialkyl group can be an alkyl group with group with from 1-20 carbons(see abstract and column 4, lines 29-30).

Palackal et al discloses that the first step in the preparation is the reaction of butyllithium with fluorene to form a  $\text{Li}^+$  fluorenyl compound (i.e. alkali metalide of the metallocene ? )(see column 9, example II).

Palackal et al discloses that the silylating reagent is a compound of formula  $(\text{R}')_2\text{Si X}_2$  wherein  $\text{R}'$  is an organo radical containing from 1-20 carbons and  $\text{X}$  is a Br, Cl or I ( i.e good leaving groups)( column 4 , lines 30-33).

Palackal et al discloses that the the n-butyl lithium is reacted with a cyclopentadienyl type ligand (Lithium fluorene or sodium cyclopentadiene) in a silylation reaction to form a dimethylfluor~~enyl~~enylcyclopentadienyl compound (See examples I and II).

Palackal et al is silent as to the isolation of the  $\text{Li}^+$  fluorenyl or  $\text{Na}^+$  cyclopentadienyl compound. However it is well within the purview of one skilled in the art to isolate the prepared alkali metalide before using it in the subsequent step.

Art Unit: 1621

Palackal et al differs from the instant invention in that the compound used in the silylation reaction is a dialkyl di halosilane(halo=Cl, Br, or I) and not a dialkyldi-triflate or mesylate silane (i.e the compounds of formula I).

Chem abs128 discloses compounds of formula I of the instant invention wherein the alkyl group Q is t-butyl and the other two ligands are trifluoromethanesulfonates (triflate).

Chem abs128 discloses that the compounds show excellent silylation properties because of the compounds high electrophilicity.

It would have been obvious to one skilled in the art to use the known silylation process of Palackal et al to produce a dialkyl di metallocene ligand(?) silane using the known bis(1,1-dimethylethyl)trifluoro methanesulfonic acid silylene ester disclosed by Chem abs 128 with the expectation of replacing one or both of the leaving groups on the dialkylsilane bis trifluoromethane sulfonate compound since Chem abs 128 discloses that the triflate compounds are excellent silylation agents. The preparation butyl lithium or an alkyl sodium compound is well known in the art as noted by applicant in the specification ,page 6, lines 4-5). The process is known and the silylating agent is known. It is not unobvious to substitute one dialkyl silylation agent (i.e. a reagent with good leaving groups such as dialkyldi-triflate silane wherein the triflate groups are the leaving groups) for another dialkyl silylation agent( dialkyldichlorosilane).

***Request for Reconsideration***



Art Unit: 1621

6. Applicant's request for reconsideration of the restriction requirement filed 1/19/99, paper no 6. has been fully considered but are not persuasive.

Applicant states that the Examiner's invention I includes claims 1-3 ( in part) and 4 and invention II includes claims 1-3 in part and claims 5-6 and 14-15. This is correct. Applicant further states that " If as the examiner's invention I admits, claim 4 can properly be examined with claims 1-3 then claim 4 can properly be examined with..... the examiner's Invention "II".

Claim 4 is a species claim to the genus found in group I and has been placed in that group as such. It does not contain an amine group. It is not a basic compound and it is not related to the compounds of Group II. Claims 1-3 are generic claims which encompass two different structural types of compounds amine compounds and compounds which do not contain and amine moiety . The compounds have different properties chemical and physical and different reactivities. The amines are basic compounds in which the hydrogen on the nitrogen can be replaced with various functional groups. The solvent systems need for the reactions of Group II must be used in view of the chemical reactivity and basic nature of the amine( for example if an acidic medium, such as sulfuric acid, was used in a reaction the sulfate salt would form and precipitate). The compounds of invention I are different from the compounds of invention II and have different effects for the reasons stated above as well as the reasons stated in the restriction of 1/7/99.

Chem abstracts discloses compounds of formula I in Group I ( see CA: 116:21128). Is applicant suggesting that inventions I and II are obvious variants and not patentable distinct

Art Unit: 1621

groups and that the known compounds in CA:116:21128 can be used in a 35 U.S.C. 103(a) obviousness rejection against the amine compounds in Group II ?

Group III and IV are methods if use of the different silylating compounds. These methods have properly been placed in separate groups for the reasons given in the restriction of 1/7/99. Applicant has not addressed the reasons given in the restriction and has only stated that it is inappropriate and wrong to restrict within a claim. If there are multiple inventions in a claim the claim can be restricted into the different inventions . It is the number of inventions not the number of claims that are used when restricting an application. Applicant has made no comments on Group V and the examiner will also not comment on Group V.

The restriction has complied 35 U.S.C. 121 and is proper. The restriction is made FINAL.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US4939250 discloses the preparation of beta lactam derivatives. The silylating agent used in US4939250 is an trialkyl silyl group wherein the leaving ligand is selected from the group including iodide, trifluoromethanesulfonate (triflate) and 1,1,2,2 tetrafluoroethane sulfonate. J Organometallic Chemistry 340 (1988) discloses the synthesis and reactions of silanes containing two triate groups. US 3036105 discloses the preparation of unsymmetrically substituted siloxanylferrocenes wherein the preparation includes reacting n-butyllithium and cyclopentadiene followed by the addition of dimethyldichloro silane. US 2667501 discloses cyclopentadienylsilanes

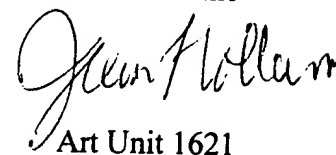
Art Unit:-1621

by reaction of methyl magnesium bromide and cyclopentadiene followed by the reaction with dimethyldichlorosilane to form the monocyclopentadienyldimethylchloro silane.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr J F Vollano whose telephone number is (703) 305-4483. The examiner can normally be reached on Monday to Thursday from 6:30 to 5:00 .
9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Geist , can be reached on (703)308-1701 . The official fax phone number for the organization where this application or proceeding is assigned is (703)308-4556. It should be noted that the examiner cannot immediately work on a fax sent to this number.
10. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-1235.

>

Jean F Vollano



Art Unit 1621

March 24, 1999